has been reported in 40 percent of male contacts of females with gonorrhea,[18] aggressive tracing of contacts is indicated.

Summary

The Fitz-Hugh—Curtis syndrome, gonococcal peritonitis of the upper abdomen, usually presents with right upper quadrant pain and has rarely been reported in adolescents. The case of a 16-year-old girl in whom there was left upper quadrant pain and in whom initial findings on pelvic examination were normal is described.

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Peripheral Arterial Tumor Embolism by Malignant Tumor

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EMBOLIZATION OF A peripheral artery most commonly originates from the heart. Mural thrombus secondary to atrial fibrillation and myocardial infarction is the usual cause.[1,2] Rarer etiologies include atrial myxoma,[3] paradoxical embolism,[4,5] atherosclerosis,[6-9] subacute bacterial endocarditis,[10] fungal endocarditis,[11] release of prosthetic valve material,[12] idiopathic hypertrophic subaortic stenosis,[13] hyatid cyst,[14] echinococcal cyst,[15] ventricular aneurysms,[16] bullets,[17,18] mitral stenosis,[19,20] false aneurysms[21] and arterial malignancy.[22] This paper presents the 32nd reported case of tumor embolism and reviews its salient features.

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Report of a Case

A 53-year-old woman was admitted to Tucson Medical Center on January 21, 1977, with a 2½-hour history of severe pain, numbness and coldness of both legs. She had a history of organic heart disease and hypertension, but she was asymptomatic in those respects. She had been followed for the past year for a nonexpanding nodule in her right lung (Figure 1). On physical examination there were no pulses in the right groin or in distal arteries of either leg. A weak left femoral pulse was palpable.

An immediate retrograde bilateral aortoiliac and femoral embolectomy was carried out through common femoral arteriotomies and good flow was established in the extremities. The pathology report showed poorly differentiated carcinoma in the clot.

Tomography showed that the pulmonary mass was larger than was shown on routine x-ray of the chest. Examination of subsequent bronchoscopic washings showed possibility of malignancy. On February 9, 1977, an exploratory thoracotomy and right lower lobectomy were done. Postoperatively she was unresponsive because of cerebral vascular insult; she died February 12, 1977. On postmortem examination, an undifferentiated sarcoma of unknown cause was found with multiple tumor emboli to the right kidney, brain and liver.

The pulmonary lesion was a metastatic sarcoma (Figures 2, 3).

Discussion

Tumor is a rare cause of arterial embolization, and this is the ninth reported case of successful removal of a malignant tumor embolus (Table 1). Pathologic examination of the embolic specimen led to the correct diagnosis, illustrating the need for pathologic examination of all embolic material. All but one of the reported cases of tumor embolism were associated with lung malignancy, and the remaining one was due to aortic invasion of a pelvic osteogenic sarcoma with distal embolization.[22] The occurrence of tumor embolization during surgical operation for pulmonary cancer has been reported by others (Table 2), and several authors have suggested obtaining early venous control in resecting large lung tumors with known venous invasion.[6,12,29,30,32,36]

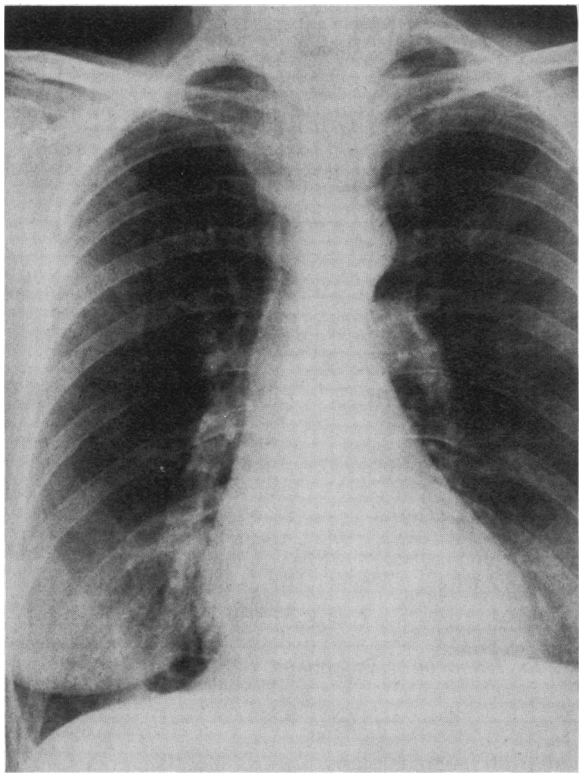

Figure 1.—Admission x-ray of chest showing lesion below right inferior pulmonary artery.

Summary

A rare case of peripheral arterial embolization by malignant tumor is reported and the literature

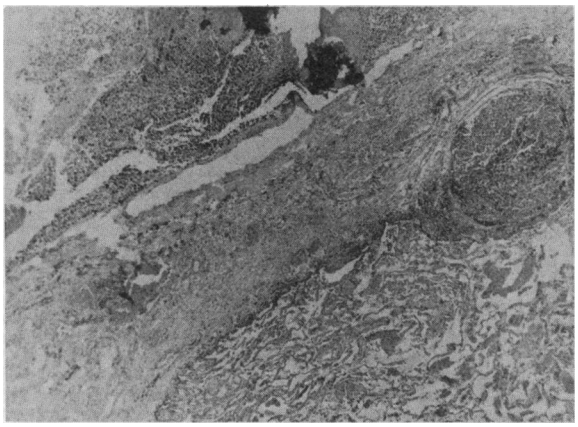

Figure 2.—Low-power view of tumor embolus in pulmonary vein.

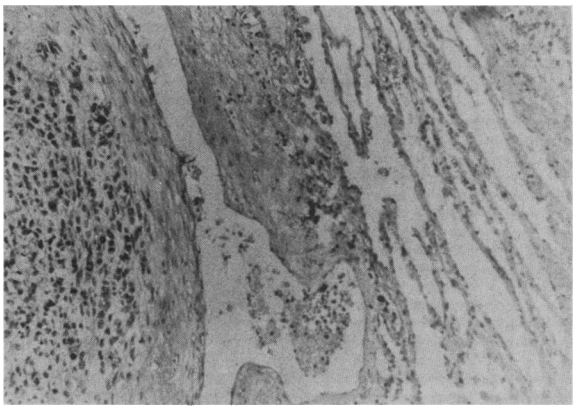

Figure 3.—High-power view showing tumor embolus in pulmonary vein.

TABLE 1.—*Systemic Tumor Embolism, Successful Removal*

Authors and Year of Publication	*Origin of Tumor Embolus*	*Obstructed Arteries*
Mital and associates, 1971[23]	Thyroid malignancy with pulmonary metastasis	Aortic bifurcation
DeBoer and Prillevits, 1969[24]	Undifferentiated lung carcinoma*	Femoral artery
Groth, 1940[25]	Tibial sarcoma with lung metastasis	Femoral artery
Blum, 1950[26]	Oat cell carcinoma of lung	Femoral artery
Firor and Pearson, 1967[27]	Squamous cell carcinoma of lung*	Aortic bifurcation
Soriano and associates, 1964[28]	Osteogenic sarcoma of fibula with lung metastasis	Femoral artery
MacMahon and associates, 1974[29]	Giant cell carcinoma of lung*	Distal aorta
	Undifferentiated carcinoma of lung*	Brachial artery
Personal observation	Metastatic sarcoma to lung*	Aortic bifurcation

*See Table 2.

is reviewed. Tumor emboli are usually pulmonary in origin, and they are commonly associated with surgical operation for pulmonary cancer. The value of pathologic and bacteriologic examination of all embolic material is emphasized.

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TABLE 2.—*Postthoracotomy Tumor Embolism*

Authors and Year of Publication	*Primary Tumor*	*Obstructed Arteries*
DeBoer and Prillevits, 1969[24]	Undifferentiated lung carcinoma	Femoral artery
Balas and associates, 1971[30]	Undifferentiated bronchial carcinoma	Aortic bifurcation
Probert, 1956[31]	Adrenocortical carcinoma with lung metastasis	Common carotid and innominate arteries
Eason, 1950[32]	Squamous cell carcinoma of lung	Cerebral arteries
Aylwin, 1951[6]	Bronchial carcinoma	Internal and axillary arteries
	Fibrosarcoma with lung metastasis	Aorta
Taber, 1961[33]	Pulmonary adenocarcinoma	Aortic bifurcation and multiple organ arteries
Christiansen and Morgan, 1965[34]	Undifferentiated lung carcinoma	Aortic bifurcation
Senderoff and Kirschner, 1962[35]	Thyroid carcinoma with lung metastasis	Femoral artery
Firor and Pearson, 1967[27]	Squamous cell carcinoma	Aortic bifurcation
MacMahon and associates, 1974[29]	Giant cell carcinoma of lung	Aortic bifurcation
	Undifferentiated carcinoma of lung	Brachial artery
Personal observation	Metastatic sarcoma to lung	Multiple organ arteries

TABLE 3.—*Systemic Tumor Embolism, Unsuccessful Removal or Diagnosed at Autopsy*

Authors and Year of Publication	*Origin of Tumor Embolus*	*Obstructed Arteries*
Rudusky, 1965, cited by DeBoer and Prillevits, 1969[24]	Maxillary chondrosarcoma with lung metastasis	Aorta and iliac artery
Loosemore and Whittick, 1951[37]	Synovioma of knee with lung metastasis	Axillary artery
Buckmaster, 1961[38]	Oat cell carcinoma of lung	Aortic bifurcation
Green and associates, 1974[39]	Colonic adenocarcinoma with lung metastasis	Multiple organ arteries
Till and Fairburn, 1947[22]	Oat cell carcinoma of lung	Femoral artery
Cera and associates, 1957[40]	Anaplastic bronchogenic carcinoma with atrial invasion	Coronary artery
Busse, 1903[41]	Chorioepithelioma metastatic to lung	Cerebral embolism
Storjohann, 1932[36]	Chorioepithelioma metastatic to lung	Cerebral embolism
Kaufmann, 1929, cited by Loosemore and Whittick[37]	Chorionic carcinoma with lung metastasis	Splenic and renal arteries
Miller and Jackson, 1954[42]	Pulmonary myxosarcoma	Splenic and cerebral arteries
Van Way and Lawler, 1969[43]	Osteogenic sarcoma involving the pelvis and distal aorta	Femoral arteries
Lisa and associates, 1941[44]	Squamous cell carcinoma of lung	Coronary artery
Hiraoka and associates, 1976[45]	Breast carcinoma metastatic to lung	Coronary artery
Haiby and Baitlon, 1965[46]	Bronchial adenoma	Multiple organ arteries
Mori, 1964, cited by Hiraoka and associates[45]	Lung cancer	Coronary artery

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Delayed Fat Embolism After Total Hip Arthroplasty

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THE SYNDROME of fat embolism is a serious clinical entity, the pathogenesis of which remains obscure. Although several reports have appeared describing the onset of the syndrome after joint replacement using methylmethacrylate, delayed onset of the syndrome has not been reported.[1] The present case report deals with a patient in whom this syndrome developed with rather late onset and recurrent features. The possible relationship to the use of methylmethacrylate will be discussed.

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Report of a Case

A 64-year-old previously healthy man was initially seen because of increasing pain in the right hip. Vital signs were normal with the exception of an irregular pulse. There were bilateral rhonchi and wheezes; four to eight extrasystoles per minute were noted. An electrocardiogram showed unifocal premature ventricular contractions (PVC) and complete left bundle branch block. Results of complete blood count, analysis of urine and SMA-12 were normal. An x-ray film of the hips showed severe degenerative joint disease involving the right hip. The preoperative roentgenogram of the chest is shown in Figure 1.

A total hip arthroplasty was done on February 18, 1977, using an Aufranc-Turner prosthesis. The prosthesis was held in place with methylmethacrylate cement. The duration of the surgical operation was 110 minutes. The patient's vital signs were stable throughout the procedure. His urine output remained excellent during operation, exceeding 100 ml per hour, and the total blood loss was estimated at 1,200 ml. He was given 3,000 ml of lactated Ringer's solution and 1,000 ml of whole blood during the procedure. Continuous electrocardiographic monitoring showed rare PVC. Recovery in the immediate postoperative period was uneventful and the patient was transferred back to the ward in excellent condition. Postoperative treatment consisted of administration of cephalothin sodium, 1 gram given every four hours; heparin sodium, 2,000 units given intravenously every six hours, and morphine sulphate, given as needed for pain.

On the morning following operation the patient was resting comfortably. His temperature was 38°C (100.4°F) and other vital signs were normal. Total output was 3,130 ml (2,920 ml as urine and 210 ml from wound drainage). The hemoglobin and hematocrit values were stable at 13.3 grams per dl and 38.7 percent, respectively. Findings on an electrocardiogram (ECG) remained unchanged.

Thirty-six hours postoperatively the patient's temperature rose abruptly to 39.2°C (102.5°F), his respiratory rate was 36 breaths per minute and pulse was 120 beats per minute. He was confused, restless, disoriented, and incoherent. Diffuse rales were heard in both lungs and a petechial rash in the axillary and hypogastric regions de-